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NOTES ON GEOGRAPHIC DISTRIBUTION

Liolaemus patriciaiturrae Navarro and Núñez, 1993 (Squamata: Liolaemidae): Distribution extension in northern Chile and geographic distribution map

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ABSTRACT: We report two new records for *Liolaemus patriciaiturrae* in Chile, one corresponding to specimens previously misidentified as *L. nigriceps.* We also provide a map showing all the known locations of the species.

The genus *Liolaemus* comprises more than 230 species (Abdala *et al.* 2012) distributed from Perú and southern Brazil to Tierra del Fuego. The genus is divided into two subgenera: *Liolaemus* (*sensu stricto*) and *Eulaemus* (Laurent 1983), each of which has been divided into several groups.

Liolaemus patriciaiturrae (Navarro and Núñez 1993) belongs to the *Eulaemus* subgenus, *montanus* section and *montanus* series (Lobo *et al.* 2010). It is a large *Liolaemus* species, with maximum SVL of 96.6 mm. The dorsal color is gray. The throat and chest are black in males. (Navarro and Núñez 1993). This species is not included in the IUCN Red List of Threatened Species (IUCN 2010).

Liolaemus patriciaiturrae was described from El Cerrito, (26°27' S, 69°03' W, 3556 m), 12 km NW of La Ola, Atacama, Chile. Later, Moreno *et al*. (2001) mentioned one specimen captured at Nevado Jotabeche (27°40'33" S, 69°18'08" W estimated using Google Earth, Figure 1). The species has been recorded from other locations in Atacama, although with no collection of specimens: Laguna Santa Rosa (27°05'23" S, 69°10'34" W, estimated using Google Earth) (Moreno *et al*. 2000) and Mina El Hueso, near Potrerillos (26°27'01" S, 69°28'43" W, estimated using Google Earth) (Pincheira-Donoso and Núñez 2005).

During a field trip to Atacama in November 2011, we collected two specimens of *L. patriciaiturrae* in Cuesta Montandón (26°23'08" S, 69°21'34" W, 3088 m, 16 km W of El Cerrito). The specimens were found among rocks or near bushes, between 11:00 and 15:00 h. The specimens were collected under permit number N°1637 issued by Servicio Agrícola y Ganadero (SAG) and deposited in Colección de Flora y Fauna, Profesor Patricio Sánchez Reyes of Pontificia Universidad Católica de Chile (SSUC Re 163-64, Figures 2 and 3). All specimens were photographed. Midbody scales were counted according to Smith (1946). Ventrals were counted from mental scale to the anterior margin of cloacal opening. Body measurements were taken with a digital vernier (0.02 mm precision). Scale observations were made using magnifying lenses. The characteristics of these specimens matches the original description. We also examined two topotypes; SSUC Re 161-62 from El Cerrito and ten specimens of *L. rosenmanni* from La Ola (Núñez and Navarro 1992) (SSUC Re 142-51, four adults and six juveniles), the only species of the *montanus* series known to be sympatric with *L. patriciaiturrae*.

Additionally, we examined five specimens from Aldebarán (27°27'02" S, 69°21'57" W, estimated using

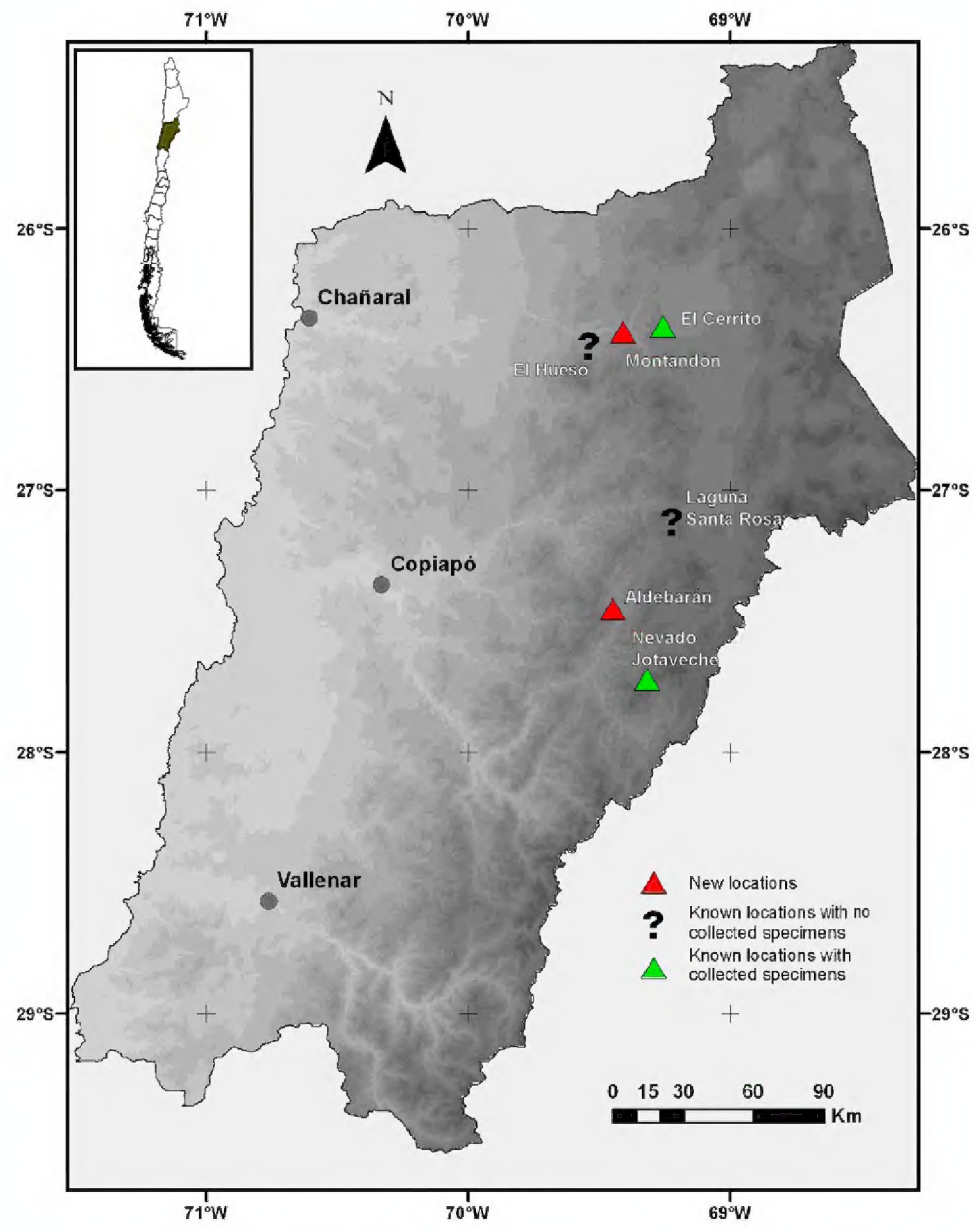

FIGURE 1. Map of Atacama region showing records of *Liolaemus patriciaiturrae*. Green triangles show previous confirmed records, red triangles show the new records and question marks indicate records with no collected specimens. Darker background indicates greater elevation. Upper left: map of Chile showing Atacama region (dark gray).

Figure 2. Specimens of *Liolaemus patriciaiturrae*. Topotypes on the left (SSUC Re 161-62). New records from Montandón on the right (SSUC Re 163-64).

Figure 3. SSUC Re 164, *Liolaemus patriciaiturrae* from Montandón, new record.

Google Earth, 110 km S of El Cerrito), Río La Gallina, Atacama. These specimens (MNHN-CL 2821-25, Figure 4) were previously identified as *L. nigriceps* (Philippi 1860) by Pincheira-Donoso and Núñez (2005). This led to other authors listing this species as present in Atacama (Troncoso-Palacios and Marambio 2011; Valladares 2011). However, *L. nigriceps* occurs in Pajonales, Llullaillaco (Antofagasta, Chile) and Socompa (Argentina) (Pincheira-Donoso and Núñez 2005) more than 240 km north of Aldebarán. The misidentification probably occurred because the two species are very similar and unfortunately the variation in scale counts and color pattern in *L. patriciaiturrae* were not included in the description of the species (Navarro and Núñez 1993). Our review of eight specimens shows that *L. patriciaiturrae* has gray dorsal background color, with black transverse lines alternating with narrow yellow or white lines, whereas *L. nigriceps* has gray background color with black transverse bars alternating with broad yellow or orange bands (based on four specimens from Llullaillaco, MNHN-CL 2971-73, 2975, Figure 4). On the other hand, *L. rosenmanni* has brown dorsal background color, with bands formed by dark brown and whitish spots, accompanied by yellow or orange spots (Figure 5).

Navarro and Núñez (1993) proposed a diagnosis for *L. patriciaiturrae* based on three characters: large size, gray dorsal color and black throat and chest in males. However, these characters are also present in *L. nigriceps* and the throat is black in both sexes in *L. patriciaiturrae*. Table 1 summarizes some comparative characters among *L. patriciaiturrae*, *L. nigriceps* and *L. rosenmanni*. According to Pincheira-Donoso and Núñez (2005) *L. patriciaiturrae* has 4–5 supraocular scales and *L. nigriceps* has 5–7. However, our data (Table 1) show that this is not a diagnostic character.

On the other hand, the *Liolaemus* from Laguna del Negro Francisco (Figure 5), 25 km from Aldebarán, identified as *L. eleodori* (Cei *et al*. 1985) by Núñez and Torres-Mura (1992) and as *Liolaemus sp.* by Moreno *et al.* (2000), strongly resembles *L. rosenmanni*. Aldebarán is located 80 km S of Pastos Largos, the type locality of *L. rosenmanni*. According to Carlos Garin (personal communication) this population corresponds to *L. rosenmanni*, but a formal study is needed to clarify this issue.

The new records of *L. patriciaiturrae* extend the species' range by 16 km (Montandón) and 110 km (Aldebarán). Although these distances are not large, the new records contribute to the understanding of the habitat and distribution of these rare lizards. Currently, the only elevational data for *L. patriciaiturrae* (3556 m) is provided

Figure 4. Top, MNHN-CL 2971-73, 2975, *Liolaemus nigriceps* from Llullaillaco. Bottom, MNHN-CL 2821-25, *Liolaemus patriciaiturrae* from Aldebarán, previously misidentified as *Liolaemus nigriceps.*

in the description (Navarro and Núñez 1993). Therefore the new record from Montandón (3088 m) represents the lowest reported elevation. The only protected population of *L. patriciaiturrae* is in Laguna Santa Rosa (in Parque Nacional Nevado de Tres Cruces). In all other locations the species is threatened by mining projects. The great diversity and similarity among *Liolaemus* species often makes identification difficult. We hope that this contribution will help to distinguish among the members of the *montanus* series.

Figure 5. *Liolaemus rosenmanni* from Laguna del Negro Francisco (photograph by Y. Marambio).

Table 1. Comparative characters in adults of *Liolaemus patriciaiturrae*, *L. nigriceps* and *L. rosenmanni.*

	L. nigriceps (♂=1, ♀=3)	***L. patriciaiturrae*** (♂=4, ♀=4)	***L. rosenmanni*** **(♂=1, ♀=3)**
Midbody scales	96–104	90–96	86–92
Ventrals	108–116	90–106	90–100
Supraoculars	5–7	4–7	5–6
Head coloration	Black	Gray to incomplete melanism	Brown with black spots
Throat pattern	Black	Black	Gray with spots (females) / inmaculate dark gray (male)
Precloacal pores (males)	6	6	6
Range of SVL (mm)	84.0–90.3	61.1–91.1	62.3–75.6

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